Project	AtlantOS – 633211
Deliverable number	D.10.8
Deliverable title	Stakeholder Engagement 'Support Facility' Test Exercise (Demonstrator)
Description	A test process (demonstrator) will be implemented to explore the practice of structuring the dialogue and information exchange with stakeholders and users
Work Package number	WP10
Work Package title	Engagement, Dissemination and Communication
Lead beneficiary	Seascape Consultants
Lead authors	Belén Martín Míguez, Jan-Bart Calewaert
Contributors	(See Acknowledgements)
Submission date	15 October 2018
Due date	31 May 2018
Comments	

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Stakeholder engagement relating to this task*

WHO are your most important stakeholders?	☐ Private company If yes, is it an SME ☐ or a large company ☐? ☐ National governmental body ☐ International organization ☐ NGO X others Please give the name(s) of the stakeholder(s): … Our stakeholders are mainly AtlantOS' partners
WHERE is/are the company(ies) or organization(s) from?	☐ Your own country ☐ Another country in the EU ☐ Another country outside the EU Please name the country(ies): All over Europe …
Is this deliverable a success story? If yes, why? **If not, why?**	☐ Yes, because ….. ☐ No, because ….. Yes and No. Yes because it illustrates concrete implementation of best practices in stakeholder engagement (developed within the project) in a number of use cases linked to the project. It also describes the progress made in using existing online platforms such as data portals as a way to inform, involve and engage users of outputs and stakeholders. No, because the engagement process in a project as complex as AtlantOS should have been initiated/embedded much earlier (before the project

	started in fact). I
Will this deliverable be used? **If yes, who will use it?** **If not, why will it not be used?**	☐ Yes, by …… The deliverable can be used to show the importance of investing time/resources in order to produce fit for purpose products out of marine data. It also shows examples of where this has worked. ☐ No, because ….. The deliverable is NOT a product to be used by any company

NOTE: This information is being collected for the following purposes:

1. To make a list of all companies/organizations with which AtlantOS partners have had contact. This is important to demonstrate the extent of industry and public-sector collaboration in the observation community. Please note that we will only publish one aggregated list of companies and not mention specific partnerships.
2. To better report success stories from the AtlantOS community on how observing delivers concrete value to society.

AtlantOS: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems

Task 10.3, Deliverable 10.8

Stakeholder Engagement 'Support Facility' Test Exercise

May 2018

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Contents

1 INTRODUCTION: STAKEHOLDER ENGAGEMENT IN ATLANTOS AND THE STAKEHOLDER ENGAGEMENT TEST EXERCISE (D10.8)

Since its onset, AtlantOS has invested resources and efforts to include stakeholder engagement in the project work. These resources and efforts have had different focuses, which is not surprising given the broad scope of the project. The Engagement Strategy (D10.1) was devised within Work Package 10, to offer a framework for engaging and communicating with stakeholders both during and after the project's lifetime in support of an Integrated Atlantic Observing System. This engagement strategy was intended to be revised as the project evolved. One of the objectives of AtlantOS is to promote engagement in all aspects of ocean observing[1], however, in practice, this engagement has happened at very different levels without following an organized, coordinated action. This is not unusual since there will always be an opportunistic aspect to stakeholder engagement, even to targeted engagement. It is important to realise that not everything can be planned in advance (e.g. one may go to a meeting to target a particular stakeholder but come away with interest from another, or a different outcome) so some level of flexibility is paramount.

The insights and recommendations resulting from Task 10.2 which translated into D10.5 ("Best practices in stakeholder engagement, data dissemination and exploitation"[2]) were intended to serve as an outline guide and as inspiration for a better engagement process through the work of all AtlantOS partners. In particular, Task 10.3 aimed at investigating options to embed engagement tools and practices into a durable stakeholder support facility, as a follow up from Task 10.2. In short: Task 10.2 provided the theoretical framework while 10.3 aimed at going a step further towards realization.

In this context, the AtlantOS DoA and consortium composition were first reviewed to explore what the project could offer to potential stakeholders and how this could be taken forward. From this review, it was decided to focus on initiating synergies with WP8 because it specifically focusses on delivering new information products for users and stakeholders in several societal benefit areas. WP8 has a clear need to engage with stakeholders to ensure development of fit-for-purpose products, uptake and impact. This report first describes the process and interactions with WP8 members, which incorporated some of the ideas presented in D10.5 in their workflow with different degrees of accomplishment.

In parallel to the work developed jointly with WP8, another pathway was explored following findings from D10.5 ("Best practices in stakeholder engagement, data dissemination and exploitation"[3]) which highlighted the value of online stakeholder engagement platforms, potentially provided by marine data portals. As a result, taking advantage of the links with EMODnet, in Task 10.3 we explored to possibility of using the EMODnet Central Portal (as an example) to provide dedicated community information for Atlantic stakeholders to support stakeholder engagement and user uptake of Atlantic marine data and observations. EMODnet, the European Marine Observation and Data Network, is one of the so-called integrators of AtlantOS and has stablished itself as the primary multidisciplinary gateway to in-situ marine data in Europe, encompassing a number of thematic portals that can be accessed through a Central platform. Stakeholder engagement activities, and in particular those related to the private sector[4], have become a priority in recent EMODnet developments. The possibility of including an Atlantic Community Page within EMODnet Central Portal was outlined/considered as described in section 2. This Atlantic Community Page would serve as a hub for linking and exchanging information with potential users of AtlantOS outputs and could potentially become a support facility for the project in the future. As part of the long-term legacy and BluePrint of AtlantOS, it could in the future also serve beyond users of AtlantOS outputs and become a hub for wider Atlantic Ocean

[1] AtlantOS Legacy: https://www.atlantos-h2020.eu/download/relevant_documents/ATLANTOS-LEGACY_April2018.pdf

[2] https://www.atlantos-h2020.eu/download/deliverables/AtlantOS_D10.5.pdf

[3] https://www.atlantos-h2020.eu/download/deliverables/AtlantOS_D10.5.pdf

[4] EMODnet for business brochure: http://www.emodnet.eu/emodnet-business-brochure

observation implementers and users, providing data resources and connecting to related Atlantic observation and knowledge projects and initiatives such as the AORA Atlantic knowledge platform.

To demonstrate the steps that can be taken to promote stakeholder engagement in the context of AtlantOS, this deliverable highlights the experience from (i) the test exercise to implement the Stakeholder Engagement Best Practices through interaction with WP8 on specific use cases, and (ii) using existing online marine data portals as a way to connect to users by designing and developing the concept for the EMODnet Atlantic Community Page.

Finally, on the basis of the experience acquired and to take into account the comments following the AtlantOS review in April 2018, we revisited the first list of recommendations from D10.5 and include an update in this report, which now offers more definitive actions that can achieve more effective stakeholder engagement once the project has finished.

2 THE STAKEHOLDER ENGAGEMENT PROCESS PUT IN PRACTICE: WP8 USE CASES AND THE CIRCLE OF ENGAGEMENT

2.1 Approach

In the D10.3 report on "Best Practices in Stakeholder Engagement, Data Dissemination and Exploitation", the stakeholder engagement process was considered as a whole, in all its complexity, describing its main elements and adapting the description to the case of AtlantOS. These elements can be related in a sequence of steps that should be followed for a successful engagement process, as described in D10.3 and based on the IOOS Summit report[5]:

Figure 1: The "Circle of engagement" with a series of steps required for successful user engagement (taken from U.S. IOOS Summit report).

[5] http://www.iooc.us/wp-content/uploads/2013/01/U.S.-IOOS-Summit-Report.pdf

The AtlantOS DoA and consortium were reviewed to explore what the project could offer to stakeholders and who should be taking this forward. Amongst the different work packages, WP8 looked particularly suitable as they were developing a set of products in seven pilot actions or Use Cases, targeted at issues of societal concern in Europe. These products seemed a good example to use to put in practice the ideas developed in D10.3.

WP10 consulted the preliminary technical documents describing the WP8 Use Cases to assess the potential for the different products to be part of a stakeholder engagement test exercise. WP10, through Task 10.3, offered support to WP8 to structure the dialogue with their stakeholders (users), and improve the impact of their pilot actions.

WP8 colleagues were ready to collaborate as they recognised that a better stakeholder engagement would help them develop more fit-for-use products and hence would contribute to increasing their impact. On 18-20 July 2017, Belén Martín Míguez (WP10) participated in the 2nd Technical WP8 Meeting which took place in Dublin.

During the presentation, the main elements of the stakeholder engagement process were discussed: determining the target users (the "who") and timing for interaction (the "when"). The step-by-step schema following Figure 1 was explained with a view to transforming it into a number of instructions which could be adapted to each WP8 pilot action. It was also discussed how community advocates could participate in the co-development of the products through a series of iterations that could lead to product improvement.

Together with WP8 teams and with the other members of WP10/WP11 present in Dublin (Anja Reitz and Kristin Hamman) a workshop was organised during the same meeting. The workshop focused on two pilot actions: Task 8.1 Harmful Algal Blooms and Task 8.4 Oil Spills and provided an opportunity to gain some insights on the main stakeholders for those tasks, as well as the kind of information exchange/contact they had with them etc. The results of the workshop were reflected in AtlantOS Milestone 15[6]. It appeared clear that the step-by-step practical framework (also called "circle of engagement") could be included in the workflow of each WP8 pilot action and effectively improve the impact of the WP8 products and the visibility of AtlantOS.

Seascape was also present in the WP8 meeting which took place in Las Palmas de Gran Canaria during the AtlantOS General Assembly in November 2018. WP8 task leaders presented progress in each of their pilot actions, made reference to their experience with the circle of engagement, and expressed their wish to collaborate further with WP10 on this matter.

As a reminder, the circle of engagement presents the following steps[7]:

Step 1. Identify the users

[6] https://www.atlantos-h2020.eu/download/M15_WP8-technical-workshop_Report_2.pdf

[7] These steps were first introduced in AtlantOS D10.5, https://www.atlantos-h2020.eu/download/deliverables/AtlantOS_D10.5.pdf

The range of potential users of marine knowledge is wide and not always well known by those who produce the knowledge. WP8 teams addressed this issue and identified a number of entities/groups who could be interested in using their outputs.

Step 2. Prioritize the users

WP8 had in most cases limited resources to engage with users, so they had to prioritize them depending on a better match for user requirements/product specifications, or based on already existing connections, some of which may have been pre-AtlantOS.

Step 3. Define user requirements

For the definition of the requirements, a fluid dialogue with the users must be established, so that there is some room for adjusting the products taking into account the users' needs. In other words, engagement should aim to gain a deeper understanding of the challenges users are facing so that project outputs can help them solve them.

Step 4. Develop Solutions/Products

Although this step should follow step 3, these steps often advance in parallel. Once the user needs are understood, the next stage in the engagement process is providing them with solutions to their problems but this works much better if done in a flexible, collaborative manner. Users are better at describing what they need when they are presented with a first option, so that they can describe what they like or don't like. New solutions and products can then be proposed based on the received feedback and recommendations.

Step 5. Conduct Outreach

It is a mistake to assume that good quality products will inevitably attract users. Users must be made aware of product availability and some resources must be dedicated to improving their uptake. However, this is easily overlooked by those who generate marine data or products, as they are mostly concerned with the outputs and less willing or able to enrol in "marketing" activities. These outreach activities are very often done while attending conferences or meetings and where products are presented to an academic audience which may limit the potential for uptake by other users. Web-based platforms can also be used for this purpose.

Step 6. Assess and Maintain Products

Ensuring the system users' satisfaction through the provision of fit-for-purpose data and products is a long-term endeavour. Users' needs can change with time and the system must be capable of first recognizing those changes, and subsequently be able to evolve to address them. Once again, this requires an investment of resources to get periodic feedback from users as well as to update the system accordingly. This feedback can be obtained through passive methods such as surveys, or more direct ones, for instance by organizing workshops. An interesting method to assess the fitness for purpose of a product in an objective measurable and comparable way has been recently set up by EMODnet Checkpoint projects, and the method has been used with WP8 AtlantOS products.

Step 7. Provide Training

Users may require training to take full advantage of the system's outputs. This is also part of the engagement process and requires specialized staff capable of providing that training. Many ocean observatories provide training as part of their outreach activities both through e-learning (tutorial videos, webinars) or in-person courses.

Step 8. Increase Advocacy

Related to the sustainability of the system and fundraising, the last step in the engagement process involves convincing users to promote and support the system, and to act as advocates. This may be a

natural by-product of the engagement process when the previous steps are accomplished and the system engages stakeholders, and - more particularly - to satisfies user needs adequately.

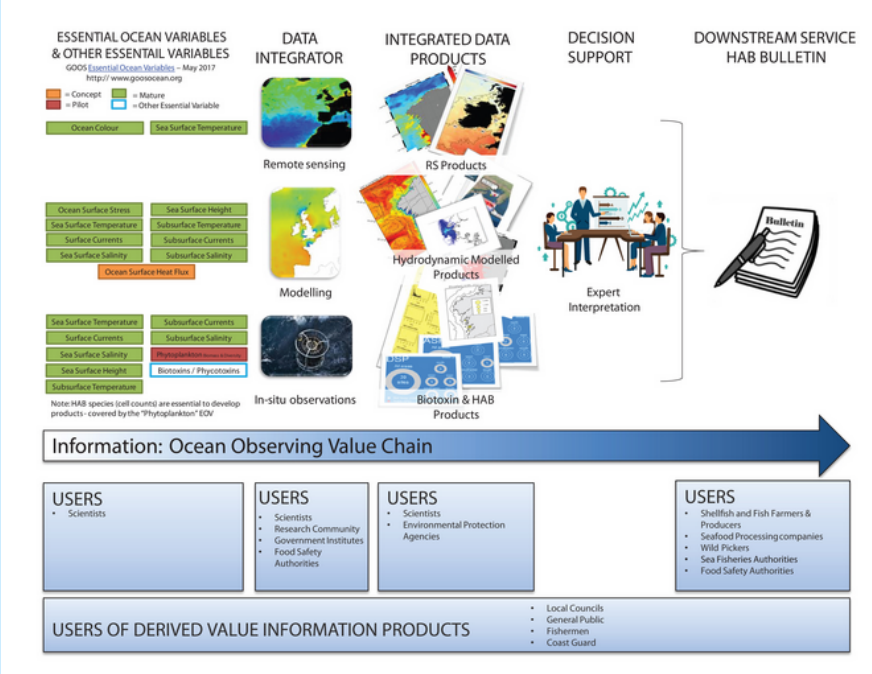
After selecting the most promising pilot WP8 Use Cases, Seascape held a number of interviews with the task leaders, to determine to what extent they had incorporated the circle of engagement in their workflow: how far they had been able to proceed with it, what bottlenecks they had encountered and to extract some learnings from their experience.

2.2 Results of the Interviews with WP8 Use Cases

Interviewees	WP8 Use Case	Date
Fiona Moejes and Julie McGuire	8.1	07/03/2018
Antonio Augusto Sepp Neves	8.4	16/03/2018
Trine Dale and Caroline Cusack	8.5	06/04/2018
Rosa Barciela	8.6	18/04/2018

2.3 Case by case analysis

Harmful Algal Blooms (Use Case 8.1)
Current status



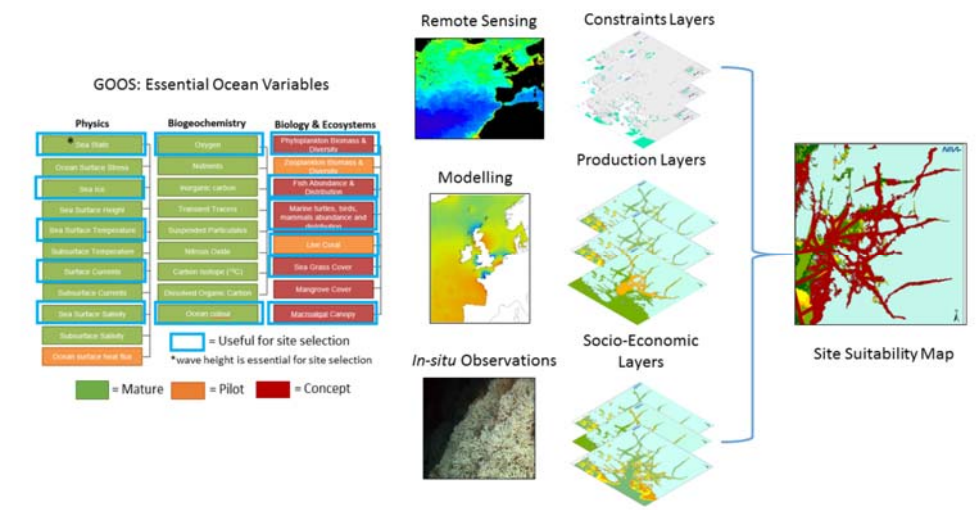
WHY	*Aquaculture industry is threatened by the occurrence of harmful algal blooms, which causes high losses to fisheries and shellfisheries. The **bulletin providing near real time and forecast information** on the occurrence of Harmful Algal Blooms (HABs) will enable improved farm management and reduce costs. Additionally, it can also be helpful for food safety authorities to plan their sampling schedule for biotoxins.*
	STEP BY STEP: THE CIRCLE OF ENGAGEMENT
(1) Identification of stakeholders	i) aquaculture industry representatives including shellfish and fin-fish farmers. Companies in the three countries covered by the task (Ireland, Norway and Spain) were identified from databases and listed. ii) aquaculture and seafood agencies; iii) Agencies in charge of monitoring programmes/Food Safety Authorities; iv) Scientists
(2) Prioritization of stakeholders and/or products	The two most important groups are shellfish farmers in the private sector and organisations involved in seafood safety and policy-making in the public sector.
(3) Definition of user requirements	Considerable work had already been done in the framework of previous projects and there was some bibliography available. But this was further refined by developing questionnaires for the aquaculture sector. The user requirements were, therefore, very clearly defined, and included areas for improvement.

(4) Develop products/ solutions	The bulletins have been developed during the project, using the best results from modelling data and satellites and taking into account the results of the questionnaires. They have been presented in AtlantOS deliverable D8.6 and they are currently available online in Ireland (totally operational, weekly release) Norway (proof of concept) and Spain (to become operational in spring 2018).
(5) Conduct outreach	This was mainly in the form of advertising where they created outreach material to explain what the bulletins could achieve. The bulletins have been presented in different events and forums. Interaction with stakeholders and outreach has also been carried out through face-to-face meetings and telephone calls.
(6) Assess and maintain products	The bulletins are maintained by the Marine Institute (Ireland), NIVA (Norway) and IEO (Spain), the same institutions that generate them. The maintenance/improvement is also done by them, as an iterative process following consultation with the users.
(7) Provide training	No formal training face-to-face training is given; but the operational bulletins are integrated in websites that provide detailed "How To" information on how to use the bulletins. In addition to that, enquiries are dealt with on a case-by-case basis.

Table 1. HAB use case, taken from AtlantOS D8.6 and supplemented by interviews with Fiona Moejes, Julie Maguire and Caroline Cusack.

Degree of completion of the Circle of Engagement: 95%

It is fair to say that the circle is virtually completed, particularly in the case of Ireland where the iteration is currently ongoing, with further improvements being envisaged as the bulletins are used and more feedback is received. This test exercise is a good example of a use case where the need (WHY) was clearly identified at the onset, and where the engagement has a long history (>10 y) using mostly face-to-face communication as well as electronic communication (the bulletins) to reach its goals.

Offshore aquaculture siting (Use Case 8.5)	
Current status	
	
	STEP BY STEP: THE CIRCLE OF ENGAGEMENT
WHY	*Expansion offshore of cultivating areas for aquaculture is likely in the future, but presents enormous challenges in terms of the sea conditions the installations will have to withstand in those areas. This tool takes into account administrative constraints and suitability for production (physical and chemical conditions) and* ***produces maps that the applicants for licences can use to pinpoint aquaculture sites****.*
(1) Identification of stakeholders	Resource managers, aquaculture industry representatives, including mussel raft producers and fishermen guilds, agencies responsible for Maritime Spatial Planning implementation, engineering companies and policy makers.
(2) Prioritization of stakeholders and/or products	Priority Users are slightly different in Norway than in Ireland/Spain. In the former case, the interest of the study was partially related with the downscaling of oil and gas sector, which drives offshore engineering companies to seek new markets. There is not a real demand from aquaculture farmers, as there is still sufficient area near the coast of Norway for farming. In Ireland/Spain, the products could be used by decision makers in the context of better spatial planning and awarding of licences in the future.
(3) Definition of user requirements	The aim of the work undertaken under this Task was a proof of concept that showed the value of ocean observations to generate products which could have a societal impact, but not to create a commercial product as such. On the other hand, users are often reluctant to share opinions: in the case of the private sector (e.g. aquaculture) there is certain fatigue after being often solicited for surveys, and in the public sector (e.g. planners), because they fear this may bind them. As consequence, the definition of user requirements was mostly based on literature surveys which is not optimal but realistic in the time frame of this case study.

(4) Develop products/ solutions	The products have been developed as proof of concept, but go beyond the initial objectives set in the DoA because they have also taken into account administrative and legal constraints related to other sectors and not strictly those related to oceanographic conditions.
(5) Conduct outreach	There is a paper in preparation for the GEO Blue Planet Supplemental Issue on Ocean Observing for Societal Benefit.
(6) Assess and maintain products	Since the intention was not to make a product suitable for the market, but just a proof of concept, this has not been planned.
(7) Provide training	Same consideration as above.

Table 1. Offshore aquaculture siting, taken from AtlantOS D8.6 and supplemented by interviews with Trine Dale and Caroline Cusack.

Degree of completion of the Circle of Engagement: 70%

The impact of the products for this Use Case is somewhat difficult to assess and most likely more indirect and longer term as there was no clear intention to reach the final users (e.g. planners, entrepreneurs…) within the duration of the project as is clear from the description of the task. An assessment of the fitness for purpose was partly done via the EMODnet Checkpoint approach but this does not involve real 'users'. The objective was mostly to demonstrate that the GIS approach worked and that they could use oceanographic data provided by AtlantOS in the production of data layers used in the task. In this perspective the task has been accomplished and there is a good potential for future work, where the products could be better adjusted taking into account the needs of the users, ideally by going through a face-to-face consultation. By approaching users with these already developed products it will be easier to illicit concrete feedback, as opposed to asking them to help in the primary development of the products by outlining their needs which.

NWS reanalysis and forecasting (Use Case 8.6)	
Current status	
	
	STEP BY STEP: THE CIRCLE OF ENGAGEMENT
WHY	The NW European Shelf Seas (NWS) are economically, environmentally and culturally important. There are statutory obligations to protect and manage the environmental quality of the NWS (like the Marine Strategic Framework Directive, MFSD) and its fisheries (Common Fisheries Policy, CFP). This requires having a good estimation of the current and recent past state of the NWS, which requires modelling in addition to monitoring. NWS reanalysis and forecasting products, provide a **complete estimation of the evolving state of the ocean** which complement observations.
(1) Identification of stakeholders	NWS reanalysis and forecasting products can have multiple users, as they provide the best possible estimates of the three-dimensional physical state of the shelf seas including temperature, salinity, currents and sea level, as well as biogeochemical parameters (primary production, nutrients, dissolved oxygen, chlorophyll concentration, light attenuation, phytoplankton, and primary productivity).
(2) Prioritization of stakeholders and/or products	CEFAS and ICES were identified as priority stakeholders taking advantage of previous contacts and on-going collaboration.

(3) Definition of user requirements	There have been meetings with CEFAS and ICES to understand their needs (data types, spatio-temporal resolution, quality, availability) and involve them in the co-creation and further development of the products. These meetings have also served to identify factors that can hinder the uptake of the products, like technical or infrastructure barriers at the user's end, and to modify the products accordingly.
(4) Develop products/ solutions	The results of the first reanalysis are freely available through CMEMS portal and can be visualized and downloaded. http://marine.copernicus.eu/north-west-shelf-monitoring-forecasting-centre-nws-mfc/. A paper summarizing the work done has also been submitted to a peer-review journal.
(5) Conduct outreach	Outreach has been done mainly using CMEMS resources, since the products developed are part of CMEMS portfolio. They are also referenced in the AtlantOS webpage. Also important, face-to-face meetings provided an opportunity to explain the characteristics and potential of the products as well as to get feedback an ideas for developments.
(6) Assess and maintain products	Products are maintained and updated through the web page of CMEMS. In addition, the interaction with CEFAS and ICES will translate into a number of modifications to make the products more fit for purpose for those users.
(7) Provide training	This has not been considered yet, but CMEMS web page makes available online tutorials and they also organise hands-on training sessions periodically to inform users about CMEMS products in general, so NWS products could be part of those training sessions.

Table 2. NWS reanalysis, taken from AtlantOS D8.5 and supplemented by interviews with Rosa Barciela, from MetOffice.

Degree of completion of the Circle of Engagement: 80%

As this Use Case builds on pre-existing collaborations with target stakeholders, the relationship with the users was established at the onset, giving some room to adapt the products to their requirements. Technically, the reanalysis results seem promising and, based on the interactions with the users, the possibilities of achieving a product that specifically meets their needs is high.

2.4 Conclusions from the test exercise

Early involvement of stakeholders/users

Only those WPs that were already working with their stakeholders in the framework of previous projects succeeded to get positive results from the engagement process. While this may appear obvious, stakeholder engagement Is often initiated too late in the process and products are developed based on what the product developers are able to make, as opposed to what is actually needed i.e. 'developer-push' as opposed to 'user-pull'.

Dedicate sufficient time to engage with stakeholders

Stakeholder engagement only works if it is taken seriously and sufficient time is allocated to it. In particular when developing products or services for intermediate or end-users, users must be put first. Obviously, technical limitations can also hinder the process of obtaining and implementing feedback from users/stakeholders, hence, the need to set aside sufficient time to overcome these obstacles.

Identify a clear need (a WHY)

It is important to identify and define a clear need, otherwise the engagement becomes unfocused and data providers, product developers and users lose interest and the whole process fails. In some cases the stakeholder/user can also be the scientific community, in that the product advances the current scientific state of knowledge about the marine environment or oceanographic modelling expertise. If this is the case then that should also be acknowledged.

Provide dedicated support

While several of the WP8 Use Cases entailed some level of stakeholder interaction or engagement, in most cases this was undertaken as part of the routine activities following good practice but not in a systematic, dedicated or even conscious way. Only via support and interaction with WP10 did the steps of the process became more apparent, be reinforced and made more efficient. This shows the value of having a dedicated person dealing with stakeholder engagement to support and advise across the broad range of AtlantOS tasks and activities.

3 STAKEHOLDER ENGAGEMENT ONLINE WEB PLATFORMS: EMODNET COMMUNITY PAGES AND ATLANTOS

3.1 Introduction

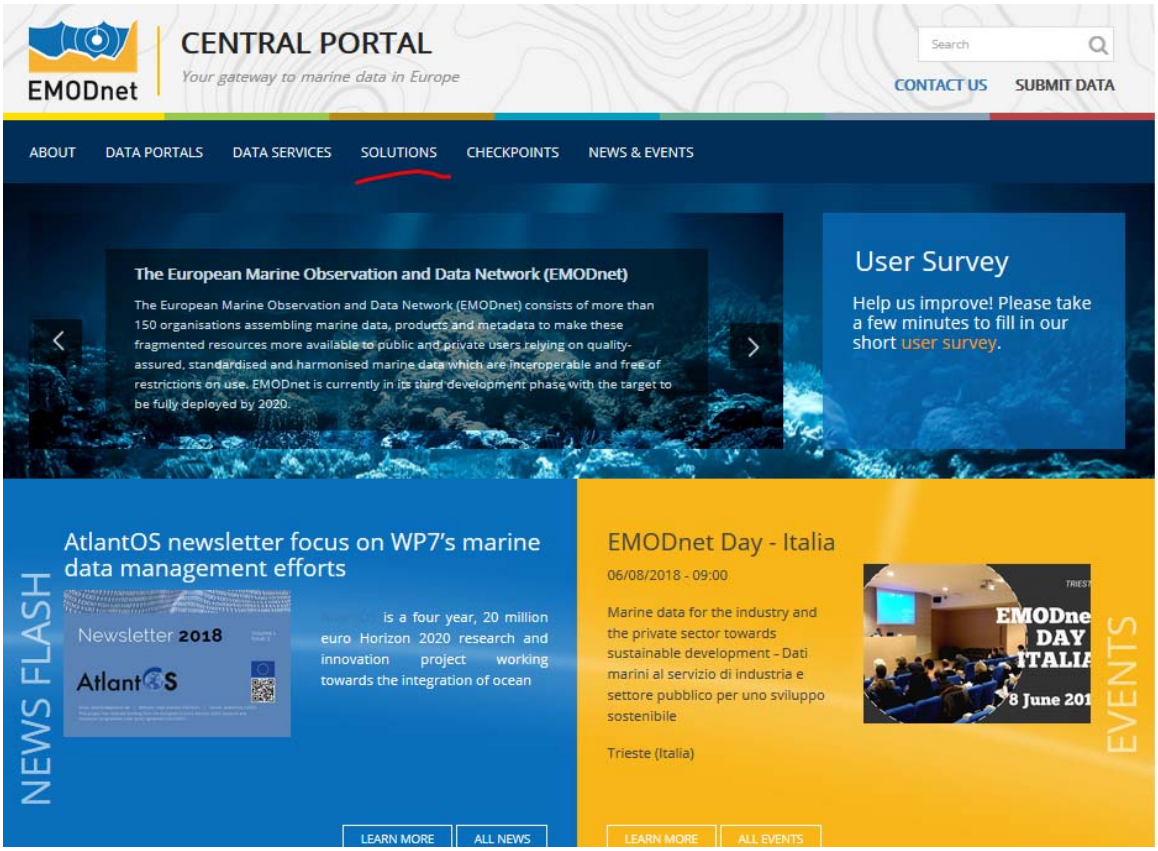
AtlantOS D10.5 ("Best practices in stakeholder engagement, data dissemination and exploitation"[8]) highlighted the value of online stakeholder engagement platforms, often as part of marine data portals, to stimulate interaction and promote uptake of marine observations and data resources as well as the development of more fit-for-purpose information products. As a way to demonstrate concrete steps that can be taken to promote stakeholder engagement in the context of AtlantOS, a dedicated activity as part of Task 10.3 focussed on using existing online marine data portals as a way to connect to users, in particular by designing and developing the concept for the EMODnet Atlantic Community Pages as an example or prototype of what could be developed as online platform for an AtlantOS Stakeholder Engagement 'Support Facility'.

3.2 Background and rational

In July 2017, DG MARE launched its strategy for global stakeholders to make it even more relevant for global users. In light of the EMODnet global strategy and taking advantage of the link with EMODnet, Seascape Consultants therefore explored the possibility of using the EMODnet Central Portal (as an example) to provide dedicated community information for Atlantic stakeholders to support their engagement and user uptake of Atlantic marine data and observations. This Atlantic Community Page would serve as a hub for linking and exchanging information with potential users of AtlantOS outputs and could potentially become a support facility for the project in the future. This concept was first discussed with AtlantOS WP leader KDM and with DG MARE Marine Knowledge coordination. This resulted in positive advice to advance the concept as part of a series of EMODnet community pages and start implementation soon after (an activity that is currently on-going).

The rationale is that Atlantic stakeholders relying on marine observation, data and information would benefit from one or more online platform(s), ideally long term (and not project limited) to (i) provide an overview and gateway to the wide range of data and information resources available to them; and (ii) inform them about activities or ways for them to connect with each other as well as the data/service providers to share their views. Whilst the AtlantOS website is very good for its purposes as a project website, it may not be a permanent service and includes general project information which is not necessarily relevant, and indeed may be off-putting, for users of data/resources. Potentially within the Atlantic community pages, we could have a dedicated AtlantOS window, linking also to the AtlantOS website for those more interested in the background to AtlantOS.

[8] https://www.atlantos-h2020.eu/download/deliverables/AtlantOS_D10.5.pdf



From end of August 2018, the Central Portal has created the following initial community pages:

- for Arctic stakeholders
- for Mediterranean stakeholders
- for Atlantic stakeholders
- European Ocean Observing System (EOOS)

3.3 Suggested initial outline for EMODnet for Atlantic Stakeholders Page

Below is an outline that was used as skeleton for the initial EMODnet Atlantic Stakeholder Community Page which will be continuously updated and further elaborated[9].

EMODnet resources for Atlantic Stakeholders

The EMODnet Central Portal and thematic subportals already provide a wealth of data and products that are relevant for users and stakeholders beyond the EU. This section provides an overview of relevant EMODnet resources for Atlantic Stakeholders.

[9] http://www.emodnet.eu/atlantic-1

- EMODnet Physics Data portal – Atlantic basin platforms – www.emodnet-physics.eu

EMODnet Physics provides access to physical data from a global set of platforms in near-real time, for the past 60 days as well as archived data. It also provides a number of data products building on data from these platforms. Users can access all available data from platforms in the Atlantic using the map viewer and selecting the Atlantic basin subset.

- EMODnet Atlantic Checkpoint webGIS metadata catalogue – http://www.emodnet-atlantic.eu/Checkpoint-service/Browser

The EMODNET Atlantic Checkpoint is a sea-basin monitoring system assessment activity aiming to support sustainable growth in the blue economy by assessing the potential of current marine observation and data services to address targeted end-user applications. The geographic coverage extends from the Atlantic Ocean north of the equator up to the Arctic Ocean and excluding the North Sea but the pragmatic geographic approach is the EU exclusive economic zones. The EMODnet Atlantic Checkpoint data stress test provides information about data adequacy for a number of pre-defined societal challenges. The Checkpoint has adopted the Sextant webGIS system to store all metadata pertaining to challenge-related data in an Atlantic Checkpoint data catalogue. From this catalogue, a number of indicators can be computed to provide our Commissioners and stakeholders with a picture of most salient data gaps in EU waters and beyond, whether they be spatial, temporal or semantic. The data portal provides access to the metadata for its own developed targeted products as well as those developed by AtlantOS WP8. The catalogue is based on Sextant developed by AtlantOS partner Ifremer.

- EMODnet Biology / Access to OBIS Atlantic subset
- Atlantic basin resources from other EMODnet portals e.g. Geology, Seabed habitats, Human Activities, Chemistry, Bathymetry
- EMODnet Central Portal data services and tools

Observation and data resources from Horizon 2020 Projects with Atlantic coverage

- H2020 AtlantOS resources – access the Atlantic data resources
    - EMODnet Physics AtlantOS mirror portal and website based monitoring tool – www.emodnet-physics.eu/AtlantOS
    - The metadata generated by the AtlantOS WP8 targeted products are being made available via the data catalogue available at http://www.emodnet-atlantic.eu/Checkpoint-service/Browser
    - AtlantOS metadata catalogue
- H2020 Atlas resources: see https://www.eu-atlas.org/
- Atlantic Ocean Research Alliance (AORA): the https://www.atlanticresource.org/aora/
- Etc.

Other resources

- NOAA North Atlantic data portal (prototype) with bathymetry data (with major contributions from EMODnet bathymetry): https://maps.ngdc.noaa.gov/viewers/north_atlantic/
- Etc.

Over time, these community sections could also harbour specific subsections or pages related to relevant projects and their outputs/results in terms of data, products and services – e.g. Atlantos catalogue, online collaborative GIS-platforms and map viewers etc. project pages. One such collaborate platform is currently being developed in another Atlantic H2020 Project called ATLAS (https://www.eu-atlas.org/).

Conclusions and recommendations

Stakeholder feedback has shown the need for an online hub to encourage stakeholder exchange of information on Atlantic Ocean observation. Beyond the AtlantOS website and the lifetime of the project, AtlantOS stakeholders therefore merit a durable well-developed 'stakeholder support facility', ideally including at least an online stakeholder forum and information exchange hub with guidance on stakeholder engagement best practices. Over time, other relevant online support tools could be developed as identified by the project and stakeholders. This should be built on existing platforms rather than duplicating effort.

Based on these observations and the prototype set out in this report (D10.8) EMODnet is urther developing an Atlantic stakeholder community section through the EMODnet Central portal to support stakeholder engagement and user uptake of Atlantic marine data and observations. These pages can be considered as prototype demonstrator of an online stakeholder support facility. It provides the basis to serve as a hub for linking and exchanging information with potential users of AtlantOS outputs and could potentially become a support facility for the project in the future with dedicated pages/tools. This will be a living portal, that can be updated based on community input and may align in the future with related initiatives such as the AORA cross-stakeholder knowledge platform. Together with related initiatives this could contribute to the "Ocean Information Delivery" component of the future Atlantic Ocean Observing BluePrint (reference full BluePrint de Young et al., in prep) (see also AtlantOS D10.11 Larkin et al., 2018 for more details on potential future Atlantic Ocean Observing coordination components). As part of the long-term legacy and BluePrint of AtlantOS, we therefore recommend to promote this platform to be further developed to serve beyond users of AtlantOS outputs and become a hub for wider Atlantic Ocean observation implementers and users, providing data resources and connecting to related Atlantic observation and knowledge projects and initiatives such as the AORA Atlantic knowledge platform. These developments should be further discussed with the AORA CSA (and upcoming new CSA for south Atlantic) to see how to link longer-term to the AORA cross-stakeholder knowledge platform plans and to the longer-term Atlantic Ocean Observing BluePrint and implementation.

4 THE WAY FORWARD

10.5. Stakeholder engagement process: general remarks possible actions recommended for AtlantOS/IAOOS and revision.

	REMARK (from D10.5)	**RECOMMENDATION (from D10.5)**	**RECOMMENDATION REVISED- NEW**
1	Stakeholder engagement is a key factor for the successful development of the project and the future sustainability of ocean observatories. Engaging stakeholders adequately requires analysing some crucial elements of the engagement process: the WHY (benefits of engaging), the WHO (stakeholders identification), the HOW (selecting the tools for engagement) and the WHEN (when to use those tools).	Invest sufficient resources to consider and analyse in depth the core elements of stakeholder engagement (WHY, WHO, WHEN and HOW) as early as possible. An initial assessment of these elements for AtlantOS is embedded in this report and other work within Work Package 10 (Engagement, Dissemination and Communication), but this should be further expanded as a basis for durable engagement in a future IAOOS.	*It should have been clear from the beginning who was responsible for engaging with stakeholders and putting in practice the ideas that were offered in D10.5 in a coordinated way. Project structuring with the separation of product development and stakeholder engagement in different work packages possibly led to inefficiencies in implementing user-led product development.*
2	Identification of stakeholders (i.e. analysing the WHO) is particularly relevant. Clarifying who are the users and understanding their needs will help establishing priorities as how to proceed with the engagement process when resources are limited.	Perform a comprehensive stakeholder mapping to successfully engage them. Such a mapping should provide an overview of the stakeholders, their importance for the observation system, their practices, needs, interests and expectations. This should also include the identification of a number of priority/target groups taking into account the available resources.	*An initial exercise should have been done where all Task leaders/responsible for outputs would identify their priority users (WHO of their outputs, whether internal or external to the project. This exercise should aim to be as specific and tangible as possible.* *It is also very important to identify the correct level of user in a particular organisation. For example, engaging with regional sea conventions, it may be more useful to engage*

			with the technical data specialists who can better elaborate what sort of products they need, rather than those more engaged with policy e.g. MSFD implementation. *As such once the initial list has been drawn up by the product developers, then this should be reviewed by those with experience in stakeholder engagement or knowledge.*
3	The engagement process must be conceived at the earliest stages of the process as clearly as possible but not rigidly. Roles of stakeholders with respect to the project are likely to vary throughout its lifecycle.	Develop a flexible approach to the engagement process, so that updates and adaptations are possible as the project evolves.	*Once the users are defined, ideally the people involved in developing the products should have had an exchange with the potential users in order to involve them in the co-development of their products. This should be done at the beginning and not at the end, even if the product is still in early stages. In many cases, these links already existed and could have been used.* *User-led product development requires an investment of time by users who may not have the resources to support this. Future such projects should consider establishing product development working groups and ensure that relevant experts from the user communities are involved and resources accordingly.*
4	Data providers must understand the advantages of contributing data instead of considering it as an extra workload.	Always ensure that data providers are visible and datasets well documented with metadata providing information about the provider. Creating Digital Object Identifiers for datasets is also recommended. If resources are available it is beneficial to offer technical assistance and training to ease provision of data. All benefits for	

		data contributors should be clearly visible on the data portal.	
5	Data providers appreciate obtaining information about the actual usage of their data. This can both serve as a motivation for contributors and as an incentive for potential ones.	All data portals should have a 'Dashboard' section on their webpages. Dashboards are easy to read, often single page, real-time user interfaces, showing a graphical presentation of the current status and historical trends of a project progress (e.g. EMODnet Physics[10]).	*This applies to data portals and has been well taken into account by WP9*
6	Successful engagement with the private sector and adequately meeting their needs occurs most commonly when there is a close link between users and developers. The user must participate in the process of developing the product from the onset and throughout; the developer must be capable of incorporating user's views and adapting the product. In some cases this will also require investing time in training, to ensure the correct uptake. This may be beyond the capacities available within an individual ocean observatory but should be available in larger observation systems.	In terms of users' involvement in development of products there are different options: Make available resources to establish early contact with potential users to learn about their needs. Conceive and develop products that can meet those needs. Offer a first prototype so that an iterative process can be initiated to get to the final product. Do not develop products, but focus on intermediate-users who in turn will develop tailored products using data provided by the observatory. A combination of the above: involve stakeholders in the prioritisation, selection and development of demonstration products. At the same time, clearly delineate the products that can be developed with public resources and those which would be better developed by intermediate users.	*All these suggestions should have been put in practice, but in reality most teams were more worried about the technicalities of what they were doing than about the potential uptake. This is also reflective of the roles of those developing the products in their own organisations. Few would be engaged or have experience in marketing, knowledge transfer or even communication/outreach. Engaging with users should be a "by default" activity, just as it is clear for everybody that there should be a publication, however this may require the allocation of specific personnel resource, adapted reward schemes and/or training.* *This should have been stressed more at the very beginning and probably at the moment of writing the proposal there should have been stronger links between WP8 and WP10 because experience shows that it is a long-term process.*

[10] http://www.emodnet-physics.eu/Map/dashboard/

7	Data portals are used by ocean observatories to disseminate and visualize data, metadata and products, and to provide services to their users. As such, they are a key tool to engage with stakeholders. Their capacity to attract visitors (how engaging they are) depends obviously on their usefulness, but also on their user-friendliness. While primarily conceived by and for scientists, who may be more concerned about the usefulness aspect, these are not the only community who can use marine data portals. Good quality data and products are a prerequisite but does not necessarily imply that they will be widely used: they need to be adequately presented.	Ensure best possible user experience by providing an intuitive navigation structure on a well-designed, well-structured portal is of great importance and resources must be dedicated to this. This may imply relying on professionals if needed.	
8	Data portals can have very different types of visitors with different expectations and requirements. In some cases it may be difficult to satisfy all users' needs with one single layout if the requirements differ greatly.	If there is one clear target group, or if the requirements and expectations of different users are sufficiently similar and well-known, it is recommended to develop the data portal in a "specialized way", tailored to better meet the expectations of the target and/or priority groups (e.g., scientists in the case of IMOS[11]). If there are several clear target groups with distinct requirements and expectations and if there are sufficient resources available, it is recommended to develop the data portal so that	

[11] https://portal.aodn.org.au/

		users when identifying themselves are redirected through different pathways or modules/interfaces depending on their preferences (e.g. see Perseus[12] project webpage according to profiles or Marine Data Portal[13] according to fields of interest).	
9	Data portals can benefit enormously from developing a reciprocal, interactive relationship with users through their data portals. Users may be keen on expressing opinions and preferences about the data and products they find in the portals. They may also want to express their demands and concerns, as well as to ask questions related to the them.	Setting up forums or helpdesks with an adequate investment of resources, e.g. with dedicated staff who can address users' comments in a proper way and do the follow up.	
10	It is important not to raise expectations among data portal users that cannot be met because it causes frustration in the user who may feel deceived. This can apply to the data appropriateness (its accuracy, time span, etc.) but also to their availability (datasets that are shown but are finally unreachable and so on).	Be candid about limitations. Using Beta versions or simply include clear explanations together with the datasets to explain their limitations in terms of quality or access.	

[12] http://www.perseus-net.eu/site/content.php

[13] http://data.marine.ie/

Summary recommendations and conclusions

The stakeholder engagement test process implemented to explore the practice of structuring the dialogue and information exchange with stakeholders and users in AtlantOS has highlighted some important points which could be considered for future projects or similar efforts:

- Consider carefully the make-up of the project consortium in the project planning stage to ensure all the necessary areas of expertise are included and resourced accordingly. If there is to be a focus on developing products for users then the inclusion of marketing or knowledge transfer experts - whose job it is to ensure uptake of data products – should be considered. Publicly-funded data product developers may not be best placed to ensure data product uptake by users. In this instance it could also have been useful to include, as a partner, an SME providing services built on ocean data to provide their expertise.
- The need to involve users in the co-creation of data products could have been facilitated by including some resourced expert panel workshops within the project to support user participation and their costs to do so. Alternatively, one or more key users could have been included with a small role as project partners.
- The project structure should be designed to ensure that work packages such as those focusing on product development and stakeholder engagement are closely linked. Stakeholder engagement should be active, and initiated in the project planning stages. In the past it has been the case to include a work package on communication/dissemination/outreach, almost as an add-on to projects such as AtlantOS, and they remain largely unrelated to the other work packages. If the project is serious about seeing uptake of data products by users then this also has to be planned in the same way as the more technical work.
- Clearly establish the project's aims and ensure that all partners understand what the aims are and what is expected of them. It is impossible for those working in stakeholder engagement or outreach to achieve user uptake without the active support of all partners, particularly those developing the products. This may sometimes mean partners moving out of their comfort zones and engaging actively with stakeholder engagement activities, such as was demonstrated in AtlantOS by the excellent input of WP8 partners.
- Systematically collecting user feedback and tracking the use and success of the data products developed in AtlantOS, both in terms of how these are used and how often, will be necessary to obtain the necessary information about what works and what doesn't work in developing data products.

ABBREVIATIONS AND ACRONYMS

CMEMS	Copernicus Marine Environment and Monitoring System
DG MARE	European Commission Directorate-General of Maritime Affairs and Fisheries
DG RES	European Commission Directorate-General for Research and Innovation
EMB	European Marine Board
EMODnet	European Marine Observation and Data Network
EOOS	European Ocean Observing System
ERA-NET	European Research Area Net
EuroGOOS	European component of the Global Ocean Observing System (GOOS)
JPI Oceans	Joint Programme Initiative Oceans
GEOSS	Global Earth Observation System of Systems
GIS	Geographic Information Service
HF radar	High Frequency Radar
IAOOS	Integrated Atlantic Ocean Observing System
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
OECD	Organisation for Economic Co-operation and Development
OGC	Open Geospatial Consortium
ODP	Ocean Data Portal
QA/QC	Quality Assurance/Quality Control
SME	Small and Medium-sized Enterprises
WFS	Web Feature Service
WMS	Web Map Service